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Robert J. Bolender

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SYNAPTICS C/O WAGNER BLECHER LLP
123 WESTRIDGE DRIVE
WATSONVILLE, CA 95076

EXAMINER

BECK, ALEXANDER S

ART UNIT

PAPER NUMBER

2629

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/635,748	Applicant(s) BOLENDER ET AL.	
	Examiner ALEXANDER S. BECK	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Acknowledgment is made of the amendment filed Sep. 23, 2008 ("Amend."), in which the rejections of the claims are traversed. Claims 1-13 are currently pending and an Office action on the merits follows.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,924,789 to Bick ("Bick") in view of U.S. Patent No. 6,188,391 to Seely et al. ("Seely") and U.S. Patent No. 4,028,509 to Zurcher ("Zurcher").

As to claim 1, Bick discloses a capacitive sensing device in Figures 3 and 4 for use in a keypad assembly of an electronic system, the capacitive sensing device comprising: a substantially transparent capacitive sensor (Bick, 19, 28), the substantially transparent

capacitive sensor configured to be disposed within the keypad assembly without requiring the formation of key post holes therethrough, the substantially transparent capacitive sensor is coupled to a keymat (Bick, 17, 18, 27, 29, 30) having a plurality of keys formed therein, the substantially transparent capacitive sensor integrated within the keymat; and the substantially transparent capacitive sensor having a flexibility which enables desired tactile response during use of the plurality of keys of the keypad assembly (Bick, col. 2, l. 35 – col. 3, l. 29).

Bick does not disclose expressly wherein the substantially transparent capacitive sensor is a single sheet, as claimed. Seely discloses a capacitive sensor in Figures 6 through 8B, analogous in art with Bick in that both references are directed towards detecting user input in a semiconductor device through the use of capacitive type sensors, with a patterning of sensors that consolidates the conventional horizontal layer of sensors and vertical layer of sensors into one single sheet layer (Seely, col. 5, ll. 48-59). At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the substantially transparent capacitive sensor of Bick such that the sensors were patterned, as taught by Seely. The suggestion/motivation for doing so would have been to consolidate the sensor into a single layer and thereby achieve a compact capacitive sensing device, as one of ordinary skill in the art would appreciate.

Seely discloses wherein the single sheet capacitive sensor is provided on a printed circuit board (PCB). Although Seely does not disclose expressly wherein the PCB is flexible and transparent so as to be incorporated into the electronic system of Bick, Zurcher discloses a transparent and flexible PCB for use in a keypad assembly of an electronic system (Zurcher, Abstract). At the time the invention was made it would have been obvious to one having ordinary skill in the art to further modify the teachings of Bick and Seely such that the substantially transparent single sheet capacitive sensor of Bick and Seely was realized on a flexible transparent PCB, as taught by Zurcher. The suggestion/motivation for doing so would have been such that the single sheet capacitive

sensor on a PCB taught by Seely could be realized in the electronic device of Bick by allowing the dome switches at the bottom of the keypad assembly to be actuated through the single sheet capacitive sensor and allow light to pass therethrough.

As to claim 2, Bick discloses wherein said substantially transparent capacitive sensor (Bick, 19, 28) comprises a substantially transparent substrate (28) wherein the patterning of capacitive sensors (Bick, 22, 24) is comprised of a substantially transparent material and is disposed above said substantially transparent substrate (Bick, col. 2, l. 35 – col. 3, l. 29). Furthermore, as discussed above Seely discloses a capacitive sensor with a patterning of sensors that consolidates the conventional horizontal layer of sensors and vertical sensors into one single sheet layer. Specifically, Seely discloses in Figures 6 through 8B a first pattern of conductive sensors (Seely, 68, 69) disposed within a sensing region; a second pattern of conductive sensors (Seely, 68) (“floating”) disposed within said sensing region, said first pattern of conductive sensors (Seely, 68, 69) and said second pattern of conductive sensors (Seely, 68) (“floating”) disposed in a common single layer; and a plurality of conductive bridges (Seely, 104) disposed to electrically couple portions of said second pattern of conductive sensors (Seely, 68) (“floating”) (Seely, col. 5, l. 48 – col. 7, l. 11). Therefore, when the teachings of Bick and Seely are combined for the reasons stated above, it is implicitly suggested that the first and second patterns are disposed above the transparent substrate and the conductive sensors are comprised of a substantially transparent material (because the embodiment of Bick requires the transmission of light through the capacitive sensors).

As to claim 3, Bick as modified by Seely and Zurcher teaches/suggests wherein said plurality of conductive bridges is opaque (Seely, col. 5, l. 48 – col. 6, l. 31).

As to claim 4, Bick discloses wherein said substantially transparent material comprises indium tin oxide (Bick, col. 2, ll. 53-58).

As to claim 13, note the above discussion with respect to claims 1 and 2. Neither Bick, Seely nor Zurcher disclose expressly wherein said plurality of conductive bridges is selectively disposed to lessen visual interference with indicia of said keys of said keypad assembly (e.g., at least one of said plurality of keys), as claimed. In order to establish obviousness under 35 U.S.C. 103, it must appear that the state of relevant prior art was such that the claimed invention would have been obvious to one of ordinary skill in the art; in judging ordinary level of skill in the art, it is the level of skill of those who normally attack the problems of the art that counts; persons who do most of the problem solving in involved art are graduate engineers; as such they are chargeable with general knowledge concerning principles of engineering, outside the narrow field involved, and with skills, ingenuity, and competence of the average professional engineer. Mueller Brass CO. v. Reading Industries, 176 USPQ 361, 372 (1972). In the instant case, the teachings of Bick and Seely are combinable for the same reasons set forth in the paragraphs regarding claims 1 and 2. Bick requires the capacitive sensor (Bick, 19) to be substantially transparent so as to permit a light emitted from EL layer (Bick, 29) to penetrate therethrough and illuminate indicia on the keys (Bick, 18) (Bick, col. 2, l. 35 – col. 3, l. 29). However, Seely discloses electrically connecting portions of a second patterning of capacitive sensors through the use of opaque conductive bridges (Seely, col. 5, l. 48 – col. 6, l. 31).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to selectively dispose the conductive bridges so as to lessen visual interference with indicia of at least one of said plurality of keys (Bick, 18). The suggestion/motivation would have been because a graduate engineer, with the ingenuity and competence of the average professional engineer, would understand that a

fundamental problem occurs when combining the teachings of Bick and Seely. Specifically, disposing an opaque material in between an EL layer emitting a light source and an indicia on a key would disadvantageously block a portion of the emitted light, thus reducing the brightness at the surface of the key as perceived by an individual. Therefore, going back to the original problem, a fundamental solution is to minimize the occurrence of the opaque material disposed in between the EL layer emitting a light source and the indicia of said keys of said keypad assembly, resulting in the limitations as presently claimed.

5. Claims 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bick, Seely and Zurcher as applied to claims 1-4 and 13 above, and further in view of U.S. Patent No. 6,664,489 to Kleinhans et al. ("Kleinhans").

As to claims 5 and 10, note the above discussion with respect to claims 1 and 2. Neither Bick, Seely nor Zurcher disclose expressly wherein the first and second patterns of conductive sensors further comprise: at least a portion comprised of a substantially opaque conductive material electrically coupled to said substantially transparent material of said first and second patterns of conductive sensors. Kleinhans discloses a capacitive sensing device in Figures 1 through 3, analogous in art with the references above, wherein a substantially transparent conductive sensor (Kleinhans, 12) comprises at least a portion comprised of a substantially opaque conductive (Kleinhans, 23) material electrically coupled to the substantially transparent conductive sensor (Kleinhans, 12) (Kleinhans, col. 3, l. 66 – col. 4, l. 9).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further modify the capacitive sensing device of Bick, Seely and Zurcher such that the first and second patterns of conductive sensors comprise at least a portion comprised of a substantially opaque conductive material electrically coupled to

said substantially transparent material of the first and second patterns of conductive sensors, as taught/suggested by Kleinhans. The suggestion/motivation for doing so would have been to represent indicia on a surface to be viewed by a user through light emitted by a light-emitting surface (Kleinhans, col. 3, l. 66 – col. 4, l. 9).

As to claims 6 and 12, Kleinhans further discloses in Figures 1 through 3 wherein said portion of said substantially opaque conductive material further comprises openings (Kleinhans, 22) extending therethrough such that light is able to pass through said openings (Kleinhans, 22) of said substantially opaque conductive material (Kleinhans, col. 3, l. 66 – col. 4, l. 9).

As to claim 7, Seely discloses wherein said first pattern of conductive sensors is disposed to minimize capacitive interference with at least one of said plurality of conductive bridges (Seely, col. 4, ll. 47-52).

As to claims 8 and 11, Kleinhans further discloses in Figures 1 through 3 wherein said portion of said substantially opaque conductive material (Kleinhans, 23) overlies at least a portion of said substantially transparent material of said conductive sensors (Kleinhans, 12) (Kleinhans, col. 3, l. 66 – col. 4, l. 9).

As to claim 9, Kleinhans does not disclose expressly wherein the opaque material is conductive ink. Seely discloses wherein a substantially opaque conductive material comprises conductive ink and is disposed on the surface of the single sheet conductive sensor (Seely, col. 5, l. 48 – col. 6, l. 54.) At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the opaque material of Kleinhans, such that it was conductive ink, as taught/suggested by Seely. The

suggestion/motivation for doing so would have been because carbon ink is an inexpensive process (Seely, col. 5, l. 48 – col. 6, l. 54).

Response to Arguments

6. Applicant's arguments filed Sep. 23, 2008, have been fully considered but they are not persuasive.

7. Applicant argues that Zurcher is not analogous in art because Zurcher does not teach a capacitive type sensor (Amen., p. 6).

Examiner respectfully submits that Zurcher is not being relied upon for its disclosure of a capacitive type sensor, but rather for its disclosure of a PCB in a keypad assembly. Since Zurcher is in the field of keypad assemblies, examiner respectfully submits that Zurcher is analogous in art with the prior art of record.

8. Applicant argues that the modification of Bick in view of Seely and Zurcher is inappropriate as Seely has solved the capacitive sensor/Key pad issue with the use of a PCB having holes there through such that a key pushed above the PCB capacitive sensor can register with a specific sensor below the PCB via the use of through-holes (Amend., p. 6). Applicant argues that the proposed modification is inappropriate because there is no reason to suggest how a PCB of Seely having solved the problem of capacitive sensor flexibility with the use of through-holes, would have made the present claimed features obvious to a person of ordinary skill in the art (Amend., pp. 6-7). Thus, applicant argues, the references taken collectively would not have suggested one of ordinary skill in the art to combine the elements in the way the instant claims required (Amend., p. 7).

Examiner respectfully disagrees, and respectfully submits that it would have been obvious to one having ordinary skill in the art to modify Bick in view of Seely and Zurcher for the purpose of realizing a compact capacitive sensing device by consolidating

the sensor into a single layer. Although the compact capacitive sensing device of Seely is not flexible and may not function when combined alone with Bick due to the presence of a PCB in Seely, examiner respectfully submits that Bick in view of Seely and Zurcher would render claim 1 obvious because Zurcher discloses the use of a transparent and flexible PCB in a keypad assembly. Bick, Seely and Zurcher taken collectively would suggest the use of the transparent flexible PCB of Zurcher with the single sheet capacitive sensing device taught by Seely in the keypad assembly of Bick. Examiner respectfully submits that such a modification would have been obvious because one of ordinary skill in the art would appreciate that the capacitive sensing device in Bick must be flexible and transparent to operate. The suggestion/motivation for doing so would have been to realize a compact capacitive sensing device in the keypad assembly of Bick.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER S. BECK whose telephone number is (571)272-7765. The examiner can normally be reached on M-F, 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sumati Lefkowitz/
Supervisory Patent Examiner, Art Unit 2629

asb